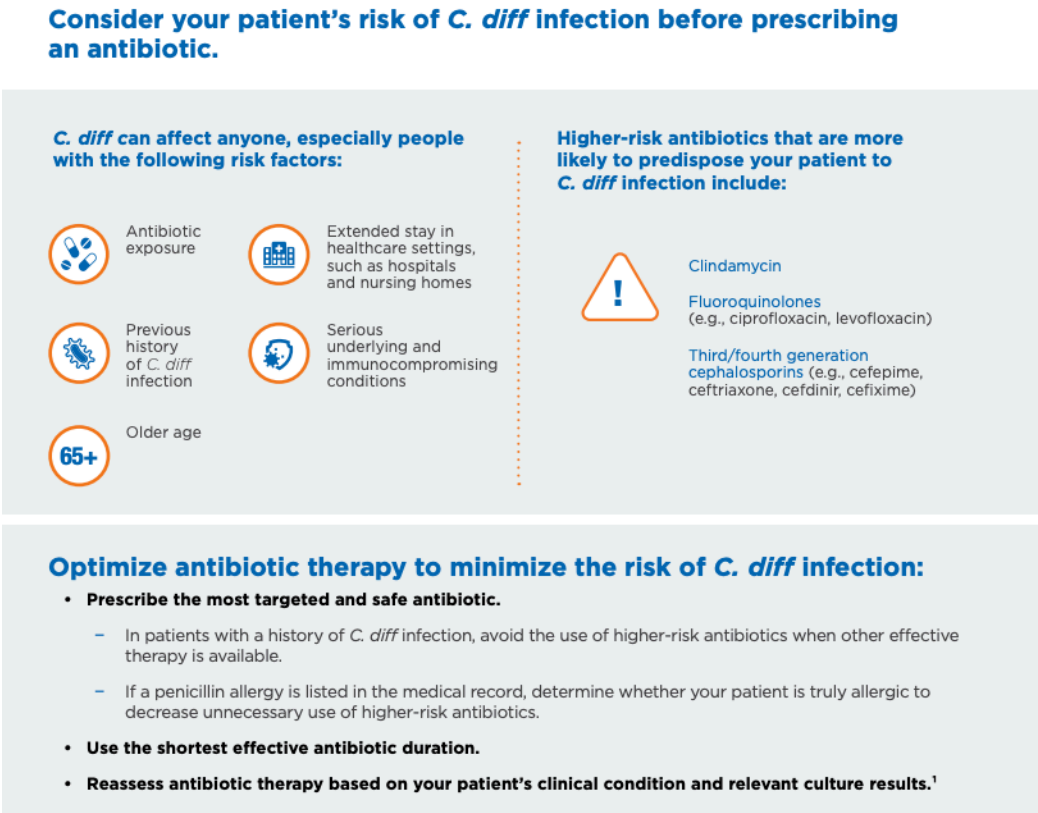
UCSF ADULT POPULATION: *CLOSTRIDIOIDES DIFFICILE* (C. DIFF) PREVENTION GUIDELINES

I. INTRODUCTION:

Clostridioides difficile (C. diff) is an anaerobic spore-forming gram-positive rod that is responsible for many healthcare-associated gastrointestinal infections nationally. C. diff is easily spread from patient to patient within the hospital setting and these infections can increase hospital lengths of stay, patient harms, and healthcare costs. The C. diff produces spores that remain viable for long periods of time and are resistant to alcohol-based hand rubs and many common disinfectants used for environmental cleaning.

C. diff is spread through the fecal-oral route when a patient ingests spores that have been shed into the environment by another actively infected patient. Healthy gut organisms can compete with C. diff and protect against infection. Treatments such as use of antibiotics disrupt the balance of healthy gut organisms and can allow C. diff to grow and produce toxins that cause diarrhea.



II. ESSENTIAL PRACTICES TO PREVENT C. DIFFICILE INFECTION

There are several essential practices that you can follow to help reduce the risk of C. difficile infection at UCSF. These interventions help prevent the development of new C. diff infections and also reduce its spread. Working closely with your interdisciplinary care teams – including nursing, hospitality staff, the microbiology lab, and fellow providers - can help keep infection rates low.

a. Antimicrobial Stewardship:

Improving antibiotic prescribing and use is critical to effectively treat infections, protect patients from harms caused by unnecessary antibiotic use (such as C. diff infections), and combat antibiotic resistance.

i. Optimizing antibiotic therapy to minimize risk of C. difficile infection:

Avoid unnecessary use of antibiotics and, when antibiotics are needed, prescribe the right antibiotics for right duration.

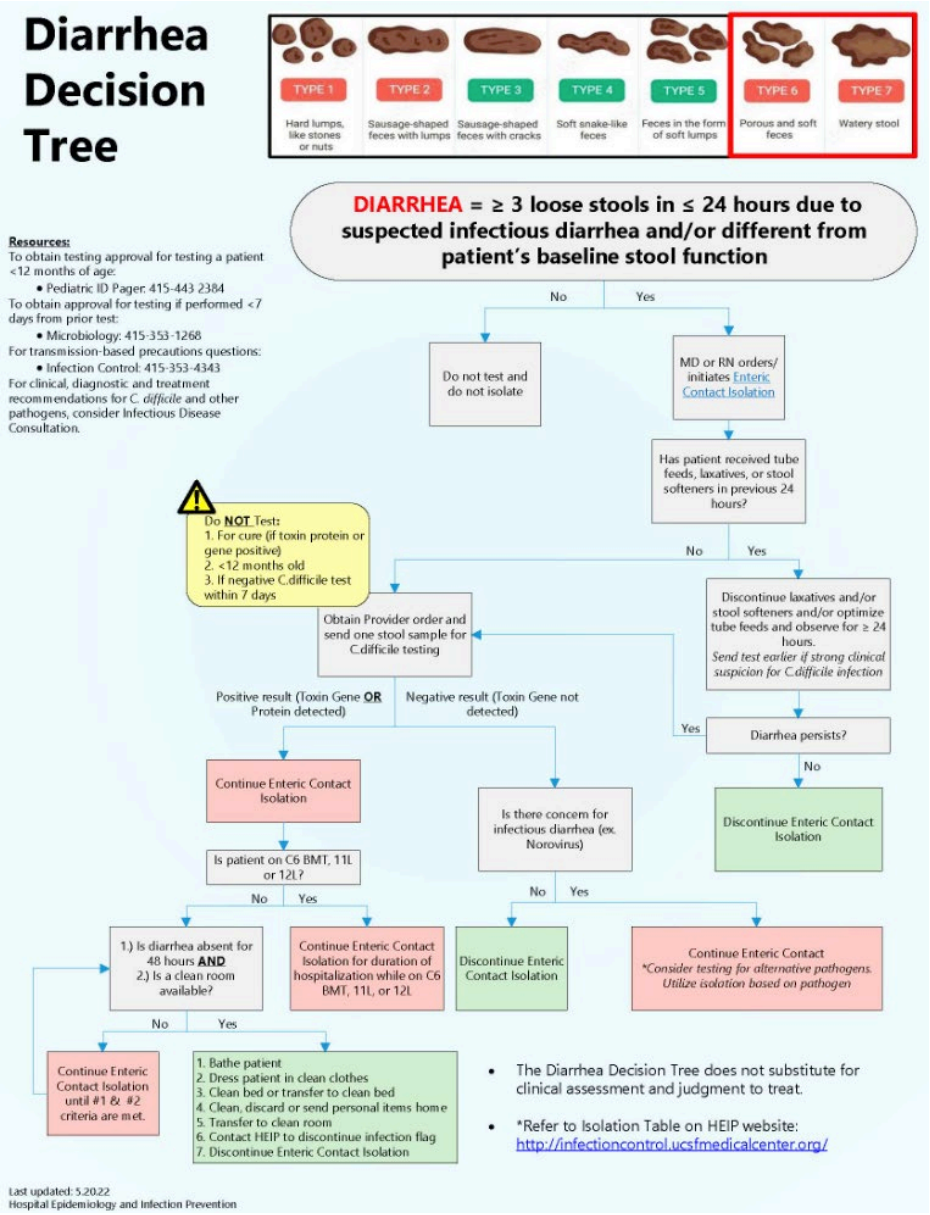
1. For assistance selecting empiric antibiotics for new infections, use the UCSF IDMP Antibiotic Guidelines for Empiric Therapy: https://idmp.ucsf.edu/guidelines-for-empiric-therapy-adults for Adults OR https://idmp.ucsf.edu/guidelines-for-empiric-therapy-pediatrics for Pediatrics
2. Antibiotic Dosing Guidelines: https://idmp.ucsf.edu/antimicrobial-dosing-guidelines
3. Modify antibiotics based on available culture results and susceptibility results.
4. Use the shortest durations of antibiotics possible.
5. Reassess antibiotic utilization based on your patient's clinical condition.
6. If any questions about your antibiotic usage or duration of therapy, contact the Infectious Diseases Consultation Service by paging the appropriate ID service for your hospital.

b. Diagnostic Stewardship:

Only order C. diff testing when clinically appropriate.

One of the most common complaints in hospitalized patients is diarrhea.[1] Providers often screen for *C. difficile* infection reflexively when diarrhea is present. However, the majority of cases of diarrhea in the hospital are due to medications, enteral feeding or underlying illnesses. Antibiotics commonly cause diarrhea, but only 20% of cases are secondary to C. difficile colitis.[2] Many patients are tested unnecessarily when they do not have diarrhea or signs/symptoms consistent with *C. difficile* infection.

i. **Use the UCSF Diarrhea Decision Tree:** When taking care of a patient with diarrhea, reference the UCSF Diarrhea Decision tree for a step-by-step guide:



https://infectioncontrol.ucsfmedicalcenter.org/diarrhea-decision-tree

ii. **Steps to take before ordering C. difficile testing:**

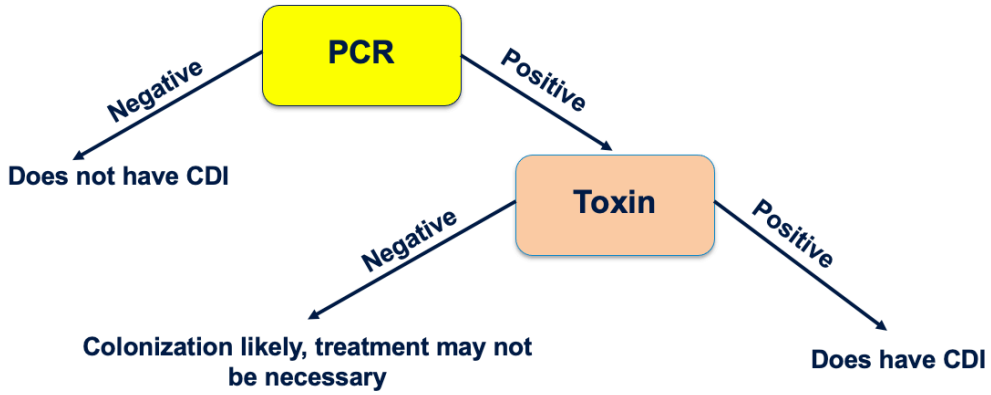
1. Confirm that your patient has had at least 3 loose stools in the previous 24 hours. Diarrhea is defined as either Bristol stool type 6 or 7 on the Bristol stool scale.
    a. If your patient has not had 3 loose stools OR stools are not Bristol stool 6 or 7, continue to monitor.

2. Place patient in **enteric contact isolation**. You should not delay placing the patient in enteric isolation if you are concerned for an infectious etiology of diarrhea.
3. **Assess for Alternative explanations of diarrhea:**
    a. **If patient is receiving laxatives or stool softeners –** Hold medications for 24 hours and reassess stool output.
    b. **If patient is receiving enteral feeds –** Work with dietary to optimize tube feeding formula to assess if this is contributing to diarrhea. Adjust tube feeds if able and reassess stools in 24 hours.
    c. If diarrhea improves after adjusting medications or tube feeds – **DO NOT TEST FOR *C. difficile* and** discontinue **enteric contact isolation**.

iii. **Indications to order the C. difficile test:**
1. Patient reports >/= 3 loose stools in 24 hours, is not receiving laxatives/stool softeners or enteral feeds, then place in **enteric contact Isolation** and test for C. difficile.
    a. If patient is on stool softeners or enteral feeds, follow step 3
    b. Test earlier if strong clinical suspicion for C. difficile infection (ex. Severely immunocompromised patients)

iv. **Do NOT order the C. difficile test IF:**
1. Patient has received laxatives/stool softeners in the last 24 hours
2. Diarrhea has improved.
    a. If you send a formed stool (Bristol stool types 1-5) to the Microbiology lab, the lab will cancel your test
3. C. difficile test was negative within the last 7 days unless diarrhea has substantially worsened, or the patient has developed other signs or symptoms suggesting *C. difficile* infection.
4. Patient is receiving treatment for *C. difficile*. We do NOT recommend test for cure. The *C. difficile* PCR is highly sensitive (>90%) and can remain positive even after resolution of symptoms.
5. Patient is less than 12 months in age. Young infants and toddlers can become asymptomatically colonized with C. difficile.

C.difficile Testing Algorithm:

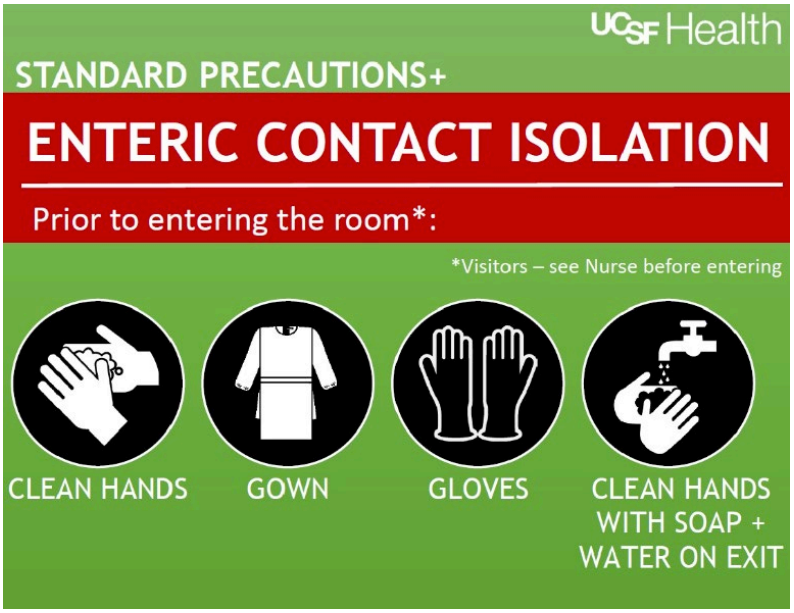


v. **Understanding the *C. difficile* test at UCSF Health:** At UCSF, to diagnose C. difficile infection, we use a two-tiered test approach. The first test processed is a *C. difficile* gene PCR, which detects the presence of C. difficile organisms that harbor the gene associated with toxin production. If the PCR result is positive, then C. difficile toxin enzyme immunoassay is processed to look for the presence of the toxin protein. Presence of C. difficile toxins in stool supports the diagnosis of C. difficile infection. However, a positive C. difficile toxin gene PCR and negative C. difficile toxin protein is more suggestive of colonization and should prompt you to consider alternative explanations for the patient's diarrhea.

1. **Typical C. difficile Test Interpretation**:

a. C. difficile toxin gene PCR (-)/C. difficile toxin protein (-): Negative. C.difficile is not present in the colon and therefore there is no toxin production. **Enteric contact isolation is not required UNLESS you have suspicion for an alternate infectious etiology of diarrhea, such as Norovirus.**
b. C. difficile toxin gene PCR (+)/C. difficile toxin protein (-): Colonization. The C. difficile bacteria is detected in the stool, but it is not actively producing a detectable amount of toxins. The bacteria are likely colonizing the colon of the patient. Consider alternative explanations for the patient's diarrhea. These patients are at higher risk of developing C. difficile infection if exposed to antibiotics. **Maintain enteric contact isolation.** These patients may not require C. difficile treatment, but if questions please contact the Infectious Diseases Consultation service for your respective hospital.
c. C. difficile toxin gene PCR (-)/C. difficile toxin protein (+): This test result will not appear. The diagnostic algorithm requires a positive PCR before a toxin protein assay is processed.
d. C. difficile toxin gene PCR (+)/C. difficile toxin protein (+): This test result is consistent with true infection. If the patient is actively having diarrhea, this result supports treatment.
    i. Follow the UCSF C. difficile treatment guidelines here: https://idmp.ucsf.edu/sites/g/files/tkssra4251/f/CDI%20Adult%20Treatment%20Guideline02.2022a_FINAL.pdf
    ii. For questions regarding appropriate treatment of C.difficile, contact the Infectious Diseases Consultation service for your respective hospital.

vi. **Steps for Enteric Contact Isolation:**
1. Prior to entering the room, clean hands with the alcohol based rub outside of the room.
2. Don a gown and gloves, which should be available in the caddy on the patient's room door.
    a. Alert the nursing staff on the unit if the caddy is empty or if no PPE is available
3. Doff gown and gloves prior to exiting the room
4. Wash your hands with soap and water upon exiting. Washing with soap and water is more effective at eliminating spores from hands. This is mainly due to the sheering force created by scrubbing hands vigorously with soap.



vii. **When to start Enteric Contact Isolation**: Place the patient in enteric isolation as soon as you suspect they may have an infectious source of diarrhea.
1. Do not wait for C. difficile results to order enteric isolation.

viii. **Enteric Contact Isolation can be discontinued when:**
1. Diarrhea resolves with discontinuation of laxatives/stool softeners or adjustment of tube feeds and there is no suspicion for an infection.
2. C. difficile test result is negative (gene PCR negative) and no alternative diarrheal infection is suspected.
3. C. difficile test result is gene PCR positive/toxin protein negative AND diarrhea absent for >/= 48 hours AND a new clean room is available:
    a. In this instance, enteric contact isolation can be discontinued but the following criteria must be met:
        i. The patient must be bathed
        ii. The patient must be dressed in clean clothes
        iii. The patient bed must be cleaned OR the patient must be transferred to a new, clean bed

iv. Patient's personal items must be cleaned, discarded or sent home
v. The patient must be transferred to a clean room
vi. Provider must contact HEIP to discuss appropriateness of discontinuing enteric isolation

ix. How long to continue Enteric Contact Isolation: Duration of enteric contact isolation depends on various factors such as clinical condition, immunocompromised status, room availability, C. difficile test results and concern for alternative infectious sources of diarrhea. You must continue enteric isolation for all the following scenarios:

1. If your patient's C. difficile test is negative, continue **enteric contact isolation** IF you still suspect an alternative infectious source of diarrhea. C. difficile is not the only organism that can spread in the hospital. If you are concerned that another infection is responsible for your patient's diarrhea, then continue enteric isolation and consider diagnostic testing for other infections.
2. If your patient is C. difficile toxin gene positive/protein negative and having diarrhea, then continue **enteric contact isolation.** Although colonized patients may have an alternative explanation for their diarrhea, they may still transmit spores into the environment while having diarrhea, which can subsequently infect other vulnerable patients leading to C. difficile colitis.
3. If your patient is either C. difficile gene positive or protein positive and is admitted to BMT Unit (Mission Bay: C6 or Parnassus: 11 or 12 Long), they must remain in **enteric contact isolation** for the duration of their admission.
4. If your patient is C. difficile gene positive/protein negative and has persistent diarrhea, continue **enteric contact isolation**.
5. If any question around Enteric Isolation, please contact HEIP at 415-353-4343 or Infection Preventionist On-call via Voalte

References:

1. J Gen Intern Med. 1997 Jan; 12(1): 57–62 PMID: 9034947
2. Clin Infect Dis. 2012 Oct;55(7):982-9 PMID: 22700831